CLAIMS

1. An organic semiconductor element comprising a gate electrode, a gate insulating layer, an organic semiconductor layer, source/drain electrodes and a protective film which are provided on a surface of a substrate, wherein an island-shaped protrusion layer having dispersed and island-shaped protrusions with a low surface energy is provided in contact with the organic semiconductor layer.

2. The organic semiconductor element according to claim 1, wherein between the gate insulating layer and the organic semiconductor layer is provided the island-shaped protrusion layer having the dispersed and island-shaped protrusions with the low surface energy.

3. The organic semiconductor element according to claim 1, wherein the gate electrode, the gate insulating layer, the island-shaped protrusion layer having the dispersed and island-shaped protrusions with the low surface energy, the organic semiconductor layer, the source/drain electrodes, and the protective film are formed in the mentioned order on the surface of the substrate.

4. The organic semiconductor element according to claim 1, wherein the gate electrode, the gate insulating layer, the organic semiconductor layer, the island-shaped protrusion layer having the dispersed and island-shaped protrusions with the low surface energy, the source/drain electrodes, and the protective film are formed in the mentioned order on the surface of the substrate.

5. The organic semiconductor element according to claim 1, wherein the gate electrode, the gate insulating layer, the source/drain electrodes, the and island-shaped protrusion layer having the island-dispersed shaped protrusions with the low surface energy, the organic semiconductor layer, and the protective film are formed in the mentioned order on the surface of the substrate.

6. The organic semiconductor element according to claim 1, wherein the gate electrode, the gate insulating layer, any one of the source/drain electrodes, the island-shaped protrusion layer having the dispersed and island-shaped protrusions with the low surface energy, the organic semiconductor layer, the other of the source/drain electrodes, and the protective film are formed in the mentioned order on the surface of the substrate.

7. The organic semiconductor element according to claim 1, wherein a surface energy of the island-shaped protrusions is 30 dyn/cm^2 or less.

8. The organic semiconductor element according to claim 1, wherein a proportion of the island-shaped protrusions dispersed in the island-shaped protrusion layer is 10 to 95% in relation to the whole island-shaped protrusion layer.

9. The organic semiconductor element according to claim 1, wherein each height of the island-shaped protrusions is 0.2 to 150 nm.

10. The organic semiconductor element according to claim 1, wherein an average diameter of the island-shaped protrusions is 0.1 to 100 nm.

11. The organic semiconductor element according to claim 1, wherein the island-shaped protrusions with the low surface energy are made of polyamide or polyimide.

12. The organic semiconductor element according to claim 1, wherein the island-shaped protrusions with the low surface energy are made of a fluorine-based polymer selected from the group consisting of

polyfumarate-based polymers and cyclic perfluoropolymers.

13. The organic semiconductor element according to claim 1, wherein the island-shaped protrusions with the low surface energy are made of a fluorine-based compound selected from the group consisting of fluoroalkylsilane compounds and perfluoroether based compounds.

14. The organic semiconductor element according to claim 1, wherein the organic semiconductor layer is made of pentacene or tetracene.

15. The organic semiconductor element according to claim 1, wherein the organic semiconductor layer has periodicity with respect to a surface normal direction of the gate insulating layer.

16. The organic semiconductor element according to claim 1, wherein the organic semiconductor layer is made of a film of a pentacene derivative and a C-axis orientation ratio of the film of the pentacene derivative is 85% or more.

17. A production method of an organic semiconductor element, comprising providing on a

surface of a substrate a gate electrode, a gate insulating layer, an organic semiconductor layer, source/drain electrodes and a protective film, wherein an island-shaped protrusion layer having dispersed and island-shaped protrusions with a low surface energy is formed in contact with the organic semiconductor layer by forming the island-shaped protrusions in a dispersed manner by spin coating or spray coating.

18. The production method according to claim 17, wherein after forming the island-shaped protrusion layer having the dispersed and island-shaped protrusions with the low surface energy, which are formed by the spin coating or spray coating, the organic semiconductor layer is formed on the island-shaped protrusion layer under a heating condition of 60°C to 200°C.

19. An active matrix type display device comprising an organic semiconductor element according to claim 1 utilizing as an active element.

20. An organic semiconductor device comprising an organic semiconductor element according to claim 1 as utilizing an IC information electronic tag.